

a single crystal silicon structure formed in said first wafer layer and including two oppositely disposed substantially vertical major surfaces and including two oppositely disposed generally horizontal minor surfaces wherein the aspect ratio of major surface to minor surface is at least 5:1; and

a carrier secured to said first wafer layer;

wherein said structure is recessed relative to the carrier such that said structure is suspended opposite the carrier.

56. (New) The micromechanical device of claim 55,
wherein said carrier includes a silicon wafer layer; and
wherein said first layer and said carrier are fusion bonded together.

57. (New) The micromechanical device of claim 55 wherein said first layer is formed of (100) oriented silicon crystal.

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58. (New) The micromechanical device of claim 55 wherein the aspect ratio of major surface to minor surface is at least 20:1.

59. (New) The micromechanical device of claim 55 wherein said structure is a beam secured at only one end thereof to said first wafer layer.

60. (New) The micromechanical device of claim 55 wherein said structure is a beam secured at one end thereof to said first wafer layer and including a seismic mass at the other end thereof.

61. (New) The micromechanical device of claim 55 wherein said structure is a beam secured at one end thereof to said first wafer layer and including an electronic circuit formed in the other end thereof.

62. (New) The micromechanical device of claim 55,
wherein said first layer is formed of (100) oriented silicon crystal; and

wherein said structure is a beam secured at one end thereof to said first wafer layer and including an electronic circuit formed in the other end thereof.

63. (New) The micromechanical device of claim 55 wherein said structure is a beam secured at one end thereof to said first wafer layer and including a plurality of vertical plates formed in the other end thereof.

64. (New) The micromechanical device of claim 55,
wherein said structure is a beam secured at one end thereof to said first wafer layer and including a plurality of vertical plates formed in the other end thereof, and
wherein said vertical plates have an aspect ratio of at least 10:1.

65. (New) The micromechanical device of claim 55,
wherein said structure is a beam secured at one end thereof to said first wafer layer and including a plurality of vertical plates formed in the other end thereof and
further including an electronic circuit formed in the other end thereof.

66. (New) The micromechanical device of claim 55,
wherein said first layer is formed of (100) oriented silicon crystal; and
wherein said structure is a beam secured at one end thereof to said first wafer layer and including a plurality of vertical plates formed in the other end thereof and
further including an electronic circuit formed in the other end thereof.

67. (New) The micromechanical device of claim 55,
wherein said first layer is formed of (100) oriented silicon crystal;
wherein said structure is a beam secured at one end thereof to said first wafer layer and including a plurality of vertical plates formed in the other end thereof and
further including an electronic circuit formed in the other end thereof, and
wherein said vertical plates have an aspect ratio of at least 10:1.

68. (New) The micromechanical device of claim 55 wherein said structure is a beam secured at both ends thereof to said first wafer layer.

69. (New) The micromechanical device of claim 55 wherein said structure is a plate secured at only one end thereof to said first wafer layer.

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70. (New) A semiconductor micromechanical device produced by the steps of:
providing a first single crystal silicon wafer layer including a recessed region;
providing a carrier;
securing the first wafer layer to the carrier with the recessed region facing the carrier; and
etching substantially vertically through the first wafer layer near the recessed region so as to form a beam integral with the first wafer layer and suspended over the carrier wherein the beam has an aspect ratio of height to width of at least 5:1.

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71. (New) The micromechanical device of claim 70 wherein the step of etching includes reactive ion etching.

72. (New) The micromechanical device of claim 70 wherein the step of providing the first wafer layer includes providing a single crystal (100) oriented silicon wafer layer.

73. (New) The micromechanical device of claim 70 wherein the step of etching includes etching substantially vertically through the first wafer layer near the recessed region so as to form multiple beams integral with the first wafer layer and suspended over the recessed region wherein each beam has an aspect ratio of height to width of at least 10:1.

74. (New) A semiconductor micromechanical device produced by the steps of:
providing a first single crystal silicon wafer layer including a recessed region;
providing a carrier;

C117 fusion bonding the first wafer layer to the carrier with the recessed region facing the carrier; and

etching substantially vertically through the first wafer layer near the recessed region so as to form a plate integral with the first wafer layer and suspended over the carrier wherein the plate has an aspect ratio of height to width of at least 5:1.

75. (New) The micromechanical device of claim 74 wherein the step of etching includes reactive ion etching.

B1 would 76. (New) The micromechanical device of claim 74 wherein the step of providing the first wafer layer includes providing a single crystal (100) oriented silicon wafer layer.

77. (New) The micromechanical device of claim 74 wherein the step of etching includes etching substantially vertically through the first wafer layer near the recessed region so as to form multiple plates integrated with the first wafer layer and suspended over the carrier wherein each plate has an aspect ratio of height to width of at least 10:1.
